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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/928,029	08/10/2001	Gopal B. Avinash	GEMS:0139/yod 15-NM-5726	5215
7590	01/04/2005		EXAMINER SMITH, RUTH S	
Patrick S. Yoder Fletcher, Yoder & Van Someren P.O. Box 692289 Houston, TX 77269-2289			ART UNIT 3737	PAPER NUMBER

DATE MAILED: 01/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/928,029	Applicant(s) AVINASH ET AL.	
	Examiner Ruth S Smith	Art Unit 3737	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 October 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Election/Restrictions

Applicant's election without traverse of the invention of Group I, claims 1-30 in the reply filed on October 28, 2004 is acknowledged.

Claim Objections

The numbering of claims is improper in that there are two claims numbered as claim 21. Misnumbered claims 21 (second occurrence)- 29 have been renumbered 22-30.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-14,16-27 are rejected under 35 U.S.C. 102(b) as being anticipated by Lampotang et al. The claims are directly readable on Lampotang et al which disclose a method of imaging the chest, which can show cardiac activity, whereby a trigger signal is used to trigger the imaging sequence. The trigger signal is a predicted signals based upon a predicted respiration signal. The predicted signal can be obtained by measuring the time between peak respiration signals and then predicting the occurrence in time of the next signal. A cardiac sensor can also be used to provide a trigger signal in addition to the respiration signal. (See column 9). The sensor used can be non-intrusive. Lampotang et al further discloses in column 10, the use of time adjustments to account for imaging system delays.

Claims 1,2,4,6-8,11-14,16-19,21-23,25,28-30 are rejected under 35 U.S.C. 102(b) as being anticipated by Watrous. The claims are directly readable on Watrous which discloses a method of triggering an imaging system which includes detecting a physiological activity such as an EKG, which indicates a beating heart, and predicting a future occurrence of a particular feature of the measured activity. The

predicted future occurrence is then used to trigger the image data acquisition. Isolating the event can include determining the occurrence of the R wave which includes identifying cyclical patterns in the cardiac activity. With respect to claim 14, the detection of the R wave is based upon known motion in the heart that causes the R wave to occur. With respect to claim 22, the neural network inherently performs the analysis as set forth in the claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 15,28-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lampotang et al. Lampotang et al disclose a method of imaging the chest, which can show cardiac activity, whereby a trigger signal is used to trigger the imaging sequence. The trigger signal is a predicted signals based upon a predicted respiration signal. The predicted signal can be obtained by measuring the time between peak respiration signals and then predicting the occurrence in time of the next signal. A cardiac sensor can also be used to provide a trigger signal in addition to the respiration signal. (See column 9). The sensor used can be non-intrusive. Lampotang et al future discloses in column 10, the use of time adjustments to account for imaging system delays. With

respect to claim 15, Lampotang et al uses a physiological detector to detect the portion of a cyclical pattern. In the absence of any showing of criticality, the specific type of detector used would have been an obvious design choice of known equivalents in the art. With respect to claims 28-30, any predictive algorithm used would inherently result in a prediction error. It would have been obvious to one skilled in the art to adjust the times determined based upon the prediction error in order to accurately trigger the event at the desired time.

Claims 15,28-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watrous. Watrous discloses a method of triggering an imaging system which includes detecting a physiological activity such as an EKG, which indicates a beating heart, and predicting a future occurrence of a particular feature of the measured activity. The predicted future occurrence is then used to trigger the image data acquisition. With respect to claim 15, Watrous uses an event detector to detect the R wave portion of the cycle. In the absence of any showing of criticality, the specific type of R-wave detector would have been an obvious design choice of known equivalents in the art. With respect to claims 28-30, it appears that the ANN inherently performs as set forth, however, it should be noted that in the absence of any showing of criticality, the specific manner in which the prediction occurs would have been an obvious design choice of known equivalents in the art.

Claims 3,5,9,10,20,23,24,26,27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watrous in view of Lampotang et al. Watrous discloses a method of triggering an imaging system which includes detecting a physiological activity such as an EKG, which indicates a beating heart, and predicting a future occurrence of a particular feature of the measured activity. The predicted future occurrence is then used to trigger the image data acquisition. Isolating the event can include determining the occurrence of the R wave which includes identifying cyclical patterns in the cardiac activity. Lampotang et al which disclose a method of imaging the chest, which can show cardiac activity, whereby a trigger signal is used to trigger the imaging sequence. The trigger signal is a predicted signals based upon a predicted respiration signal. The

predicted signal can be obtained by measuring the time between peak respiration signals and then predicting the occurrence in time of the next signal. A cardiac sensor can also be used to provide a trigger signal in addition to the respiration signal. (See column 9). The sensor used can be non-intrusive. Lampotang et al further discloses in column 10, the use of time adjustments to account for imaging system delays. It would have been obvious to one skilled in the art to have modified Watrous such that it uses the means disclosed by Lampotang et al to obtain trigger signals which are predicted based upon detected physiological signals. Such a modification involves the substitution of one known means for obtaining predicted signals to be used as a trigger for an imaging system for another.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ruth S Smith whose telephone number is (571) 272-4745. The examiner can normally be reached on M-F 7:30 AM- 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Casler can be reached on (571) 272-4956. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Ruth S Smith
Primary Examiner
Art Unit 3737

RSS